

INITIAL STATEMENT OF REASONS
PROPOSED BUILDING STANDARDS
OF THE
CALIFORNIA BUILDING STANDARDS COMMISSION
REGARDING THE CALIFORNIA BUILDING CODE,
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2

The Administrative Procedure Act (APA) requires that an Initial Statement of Reasons be available to the public upon request when a rulemaking action is being undertaken. The following information required by the APA pertains to this particular rulemaking action.

STATEMENT OF SPECIFIC PURPOSE AND RATIONALE:

There have been numerous new developments in the area of seismic design that have not been incorporated in the 2001 California Building Code, Part 2, Vol. 2 of Title 24 based on the 1997 Uniform Building Code (UBC). The California Building Standard Commission (CBSC) is proposing to upgrade the structural requirements of the 2001 California Building Code, Part 2, Vol. 2 of Title 24. to make available current seismic standards for adoption at the local level.

New structural amendments as recommended by the California Seismology commission and the Structural Engineers Association have been incorporated by some jurisdictions by way of local ordinances. These amendments were reviewed by a Seismic Ad Hoc Advisory Committee established by the CBSC for consideration for statewide application.

It is expected that there will be little or no negative financial impact on the construction industry as a result of the modifications being proposed to the existing codes.

The following is a brief summary of purpose and rationale for each specific amendment.

CHAPTER 2 -- DEFINITIONS

213 -- L
Light-Frame Construction

Purpose:

The 1997 UBC, on several occasions, refers to "Light-Frame" construction. However, currently there is no definition for this term in Chapter 2 or 16. This could lead to confusion in the design and review process.

Rationale:

The proposal inserts new language, with additional clarification, which clearly identifies the types of construction, which could be deemed as light frame.

CHAPTER 16 – STRUCTURAL FORCES

1612.3.2.1 Alternate basic load combinations.

Purpose:

The proposal corrects a significant deficiency in the 1997 UBC.

Rationale:

The proposal clarifies that it was not the intent of the code to allow the one-third increase for wind or earthquake to be cumulative with duration of load factors as permitted in chapter 23 of UBC, by inserting new language that explicitly indicates that.

1629.4.2. Seismic Zone 4 near-source factor.**Purpose:**

The proposal corrects a significant deficiency in the 1997 UBC.

Rationale:

Sections 9.6a and 9.6b of AISC - Seismic Part 1 exempts strong-column/weak-beam requirements under certain load conditions and configurations for steel Special and Intermediate moment frames. 97 UBC Section 1629.4.2 item 4 require that structures located near fault shall comply with SC/WB. The revision reflects the same requirements as in 1997 AISC-Seismic. This is consistent with SEAOC Seismology position.

1630.2.3.4 Horizontal Distribution**Purpose:**

The proposal corrects a significant deficiency in the 1997 UBC.

Rationale:

To ensure that the assumption of flexible diaphragms are limited only to simplified procedure which requires design for additional seismic loads.

1630.4.2.1 Vertical Combinations**Purpose:**

To add language to ensure that the seismic forces are not inadvertently reduced from higher level to a lower level due to different lateral force resisting systems along the height of the building.

Rationale:

This amendment is needed due to local geological conditions.

1630.8.2.1.1 General.**Purpose:**

The added language clarifies the types of elements that would be of concern, such as beams and column supporting discontinuous systems. It also ensures that the connection of such discontinuous elements are designed for a load less than the member above is designed for. For example in case of steel columns that are part of lateral force resisting system, which are designed for the special load combination, it is critical to ensure that their connections also have sufficient capacity to transmit the load to the supporting element.

Rationale:

To clarify the application of special seismic load combination to discontinuous systems, since the code currently only refers to the material types to be considered not which types of elements.

1630.8.2.2.1 Detailing requirements in Seismic Zones 3 and 4.

Purpose:

The provision is adopted in AISC-Seismic 97 Part I, Section 8.3 and applicable to all axial loaded members. Redundant.

Rationale:

Old section is no longer applicable. Replace with provision in the AISC-Seismic.

TABLE 16.1N – STRUCTURAL SYSTEMS

Purpose:

The proposal allows the use of Ordinary Moment Frames and Intermediate Moment frames with certain limitations on height and dead load.

Rationale:

Editorially revise/update table to make it consistent with the adoption of 1997 AISC-Seismic Provisions and the latest Supplements. These provisions are fundamentally updated from previous editions. It has incorporated to the extent possible, most recent findings from the FEMA funded SAC Reports.

CHAPTER 17 – STRUCTURAL TESTS AND INSPECTIONS

1701.5 Types of Work, Sec. 5.2

Purpose:

The proposal corrects a significant deficiency in the 1997 UBC.

Rationale:

To be consistent with AISC-Seismic Part I requirements for nondestructive testing for welded joints, which are subject to net tensile forces in moment frames and braced frames.

1702.1 -- STRUCTURAL OBSERVATION

Purpose:

The current wording for requiring structural observation does not provide adequate accountability or good record and is in need for improvement. This modification will correct this deficiency.

Rationale:

The provision is amended to better define the requirement for Structural Observation. It also allows the construction team members to coordinate and communicate more and for Building Officials to keep better record of the required activities. Enhanced enforcement of the Structural Observation will improve construction quality in general.

1703.1 – NONDESTRUCTIVE TESTING

Purpose:

Restrictions were added to both steel moment resisting frame and steel braced frame systems. The current language only pertains to moment resisting frame systems and does not include other steel systems.

Rationale:

Section 1703 outlines the requirements for nondestructive testing of structural elements and connections. 1997 AISC-Seismic Part I, which is adopted by the CBSC for DSA and OSHPD, requires nondestructive testing for all welded joints in moment frames and braced frames. This amendment reconciles Section 1703 with 1997 AISC-Seismic for consistency.

CHAPTER 19 - CONCRETE

1915 – FOOTINGS

1915.2.2.1

Purpose:

The existing code language for the design of footings per Allowable Stress Design criteria refers to unfactored loads, which is not correct. The load combinations used for allowable stress design actually have some load factors associated with different types of loads. This change will correct this condition.

Rationale:

The proposed language eliminates the reference to unfactored loads and directly references the appropriate section for the load combinations, which need to be used.

1928.1.2.3.1 Basic Calculations

Purpose:

The proposal corrects a significant deficiency in the 1997 UBC.

Rationale:

This section was editorially revised/updated to make it consistent with the adoption of 1997 AISC-Seismic Provisions and the latest Supplements. These provisions are fundamentally updated from previous editions.

CHAPTER 22 - STEEL

2204.1.1 Load and Resistance Factor Design

Purpose:

Research after the 1994 Northridge earthquake conducted by FEMA funded SAC Joint Venture concluded that more restricted use of steel moment frame and braced frame buildings is required. Subsequent national standards such as NEHRP 2000 and ASCE 7-2002 implemented these restrictions. The 1997 AISC-Seismic Provisions was adopted by CBSC in March 2002, but applicable only to OSHPD and DSA, should be applicable to buildings of all occupancies. Furthermore, AISC has released Supplement No. 2, which supercedes Supplement No. 1.

Rationale:

Section 2204 is editorially revised/updated to make it consistent with the CBSC adoption of 1997 AISC-Seismic Provisions Parts I and III, and its latest Supplements. AISC-Seismic Parts I and

III, which is adopted by the CBSC for OSHPD and DSA, will then be applicable to all buildings constructed with structural steel in California.

2204.2.1 Allowable Stress Design.

Purpose:

Research after the 1994 Northridge earthquake conducted by FEMA funded SAC Joint Venture concluded that more restricted use of steel moment frame and braced frame buildings is required. Subsequent national standards such as NEHRP 2000 and ASCE 7-2002 implemented these restrictions. The 1997 AISC-Seismic Provisions was adopted by CBSC in March 2002, but applicable only to OSHPD and DSA, should be applicable to buildings of all occupancies. Furthermore, AISC has released Supplement No. 2, which supercedes Supplement No. 1.

Rationale:

Section 2204 is editorially revised/updated to make it consistent with the CBSC adoption of 1997 AISC-Seismic Provisions Parts I and III, and its latest Supplements. AISC-Seismic Parts I and III, which is adopted by the CBSC for OSHPD and DSA, will then be applicable to all buildings constructed with structural steel in California.

CHAPTER 22B, STEEL

2205.3B Seismic Design Provisions for Structural Steel

Division IV — SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS

2210B — Adoption

2211B — Design Methods

2212B — Amendments

2213B — Adoption

2214B — Design Methods

2215B — Amendments

Purpose:

The proposal corrects a significant deficiency in the 1997 UBC.

Rationale:

The current 97 UBC edition is based on the outdated 1992 AISC Seismic provisions. The proposal makes the CBC provisions consistent with the current practice which is based on the 1997 AISC Seismic with the 2 subsequent Supplements printed afterward.

CHAPTER 23 - WOOD

2315.5.6 Hold-down connectors.

Purpose:

Extensive damage to the sill plates and posts connected to holdowns were observed after the 1994 Northridge earthquake. The mis-aligned bolt holes, lack of sufficient contact area between the washer and the wood element and omission of re-tightening of bolts were the major attributes to the poor performance.

Rationale:

The observed failures led to the recommendation to use larger, square steel plate washers to reduce splitting of sill plates, the proposal applies the same rationale to the design of holdwon bolts.

Table 23-II-L MINIMUM SIZE STEEL PLATE WASHERS USED WITH HOLDOWN CONNECTORS

Purpose:

Extensive damage to the sill plates and posts connected to holdowns were observed after the 1994 Northridge earthquake. The mis-aligned bolt holes, lack of sufficient contact area between the washer and the wood element and omission of re-tightening of bolts were the major attributes to the poor performance.

Rationale:

The observed failures led to the recommendation to use larger, square steel plate washers to reduce splitting of posts in future earthquakes.

DIVISION III – DESIGN SPECIFICATIONS FOR ALLOWABLE STRESS DESIGN OF WOOD BUILDINGS

PART I – ALLOWABLE STRESS DESIGN

2316.1 Adoption and Scope

Purpose:

To update the current design criteria for wood framed buildings specification, which is more than 10 years old. This action will update this provision.

Rationale:

To update the 97 UBC with the American Forest and Paper Association and the American Wood Council publication of the 1997 NDS specifications, which incorporates many of the recent findings that were researched since publication of 1991 NDS, and it is also in a user-friendlier format.

TECHNICAL, THEORETICAL, AND EMPIRICAL STUDY, REPORT, OR SIMILAR DOCUMENTS:

1. AISC 97: Seismic design provision with supplement 1 & 2
2. FEMA funded SAC reports on steel moment frames
3. SEAOC blue book
4. SEAOC Seismology Committee recommendations
5. NDS 97: National Design Specifications for Wood Construction of the American Forest and Paper Association and supplement to the 1997 edition.

CONSIDERATION OF REASONABLE ALTERNATIVES

The Building Standards Commission has determined that there are no other reasonable alternatives considered that would be more appropriate

REASONABLE ALTERNATIVES THE AGENCY HAS IDENTIFIED THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESS.

No alternatives were identified to lessen the adverse impact on small businesses.

FACTS, EVIDENCE, DOCUMENTS, TESTIMONY, OR OTHER EVIDENCE OF NO SIGNIFICANT ADVERSE IMPACT ON BUSINESS.

No facts, evidence, documents, testimony, or other evidence of no significant adverse economic impact on business have been identified however, the adoption of more current seismic structural requirements is necessary to preserve the health and welfare of the citizens of California during seismic activity.

DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS

There is no known conflict or duplication with any of the State or Federal agency regulations. On the contrary, these regulations, if approved will be at par with the Federal and State of California regulations.